

tion in that year being nearly 4° greater than in 1826, I find with true anomaly $= -47^{\circ} 36'$, we have an agreement in longitude, while the difference of latitudes is increased to 29° .

These large differences appear conclusive against the idea of a possible connexion of the first Comet of 1818 with the Comet of Biela.

On the Rate of a Clock going in a Partial Vacuum.

By R. C. Carrington, F.R.S.

It is not easy to get a vacuum at all, I mean of the least degree, for one is soon reminded that Nature abhors a Vacuum. First, I had to abandon a mahogany case made for me by the late Mr. Frodsham as utterly useless, and to order another one made of copper, which after being tried and tried again, and repainted inside and out, at last proved tight. Then came the glasses, which necessarily enclose the front, to enable the height of the barometer within and the temperature within to be read. Suffice it to say, that I have broken eight pieces of glass, half an inch thick each, at an expense of £3 for each, and that now I have a plate with faults in it. Firstly I observed γ *Draconis* on three successive nights, the 29th, 30th, and 31st of August, 1872, and found the following errors,—

Aug. 29th	^s 3.25 fast on N. Alm.	
30	4.37	„
31	6.71	„

the barometer standing at 27ⁱⁿ.50 from the 29th to the 30th, and at 26ⁱⁿ.00 from the 30th to the 31st. These give accordingly,—

gaining 1.12	and 2.34
at 27 ⁱⁿ .50	„ 26 ⁱⁿ .00

$$\text{or } \frac{1.22}{1.50} = 0.8133 \text{ for 1 inch midway between } 27.50 \text{ and } 26.00.$$

The observations were very good; in fact, could hardly be better. The telescope was not moved during the three days.

On September 16, I commenced another set at 28.00 barometer, and continued them on the 17th and 19th; then at 29.00 on the 19th, 20th, and 21st; then at 28.50 for the 21st, 22nd, and 25th; then at 28.00 for the 25th, 26th, and 28th; then at 27.50 for the 28th and 29th and October 3rd; then at 27.00 for October 3rd and 6th, when the glass broke again and stopped me. The observations were mostly those of ζ , δ , γ , α , and β *Aquilæ*, and were not so accordant as could be desired. Nevertheless, I give the following as the resulting rates per diem,—

for 29°00	gaining rate — 0°62 per diem	temp. 52°9 F.
28°50	„ — 0°95 „	„ 52°8 F.
28°00	„ — 1°38 „	„ 52°3 F.
27°50	„ — 1°72 „	„ 51°9 F.
27°00	„ — 2°01 „	„ 51°5 F.

Combined with the former result by γ *Draconis*, I infer the following as the coefficient for barometer,—

$$+ 0^{\circ}720 (b - 27^{\circ}5)$$

and I assume — 1°70 for 27°5. There results,—

for 29°0	— 0°62	Error	0°00
28°5	— 0°98		+ 0°03
28°0	— 1°34		— 0°04
27°5	— 1°70		— 0°02
27°0	— 2°06		+ 0°05
26°5	— 2°42		—
26°0	— 2°78		— 1°14

I have to point out that in both series, the observations were taken with falling barometer, and to add that I wish to take them again from 26°00 to 29°00 rising. But noticing that the pendulum was becoming rusty, I discontinued observations after the last break, and took the pendulum down, and have had it electrogilt. I have remounted it, and rated it approximately, but now I am without the object-glass to the altazimuth. When that is returned, I shall resume the subject.

The resulting coefficient 0°720 may be of value, as I see by Sir G. B. Airy's paper on the "Figure of the Earth," in referring to the observations made by M. Carlini on Mont Cenis compared with those of M. Biot at Bordeaux. See *Encyc. Met.* "Fig. of the Earth," p. *239.

I have only to add that this paper affords the best answer, a complete negative, to one formerly written by a horologist, to show that for a pendulum swinging 2° on either side of 0, the barometer correction was nothing.

On the Parallax and Proper Motion of Lalande 21185.

By W. T. Lynn, Esq.

In vol. xlviii. p. 291, of the *Astronomische Nachrichten*, there is a paper by Dr. Winnecke, containing a provisional determination of the annual parallax of this star, which is of the seventh magnitude, and was discovered in May, 1857, by Prof. Argelander